

# ZIKA

## ***USER'S MANUAL***

### **I-DC500 II**



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## SAFETY WARNING

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- Please read this manual carefully before using it.
- The safety notes listed in this manual is to ensure correct use of the machine and to keep you and other people from being hurt.
- The machine is safety considered designed, please refer to the safety warning listed in the manual when using it in case of bad accidents.
- Wrong use of the machine will cause different extent of hurt as follows, and there will be warning sign and description for remind.

Warning sign	Description	Meaning
	<b>High-danger</b>	“High-danger” means there is possibility of severe dangerous, and may cause dead if not avoid. This sign is used in extreme case, which is normally related to body dangerous neither than property loss.
	<b>Danger</b>	“Danger” means there is possibility of dangerous situation, and may cause badly hurt if not avoid. It can also refer to property loss.
	<b>Notes</b>	This means it may cause body hurt if not avoid. Please refer to the related description when this sign occurred.



**Danger! Please follow the rules below in case of bad accidents:**

1. Do not use the machine in none-welding areas.
2. The machine is safety considered designed, please do read the warning notes carefully in case of dead or other bad accidents.
3. Follow related regulations for the construction of the input drive force, selection of the setup place, usage of the high-pressure gas, storage and configuration, safe-keeping of the workpiece after welding and management of the offal etc.
4. No entry of unrelated person to the welding area.
5. People using heart pacemaker cannot get close to the welding machine and area without the doctor's permit. The magnetism caused when connecting the machine will cause influence to the pacemaker.
6. Ask profession person to install, check and maintain the machine.

7. Please correctly understand the contents of this manual to ensure safety, and ask those professional people with safety knowledge and technique to operate the machine.



**Danger! Please follow the rules below in case of electric shock:**



**\* Any contact of electric parts may cause fatal electric shock or burnt.**

1. Don't touch any electric parts.
2. Ask professional person to connect the machine and workpiece to the ground.
3. Cut off the power box before the installation or checking, and restart after 5 minutes. For the capacitance is chargeable, please ensure it has no voltage before restart even if the power source is cut off.
4. Do not use cable without enough section or with worn-out cover or broken conductor.
5. Do ensure insulation at the cable joint parts.
6. Do not use the machine when the housing is off.
7. Do not use broken or wet insulation gloves.
8. Use safety net when work at high position.
9. Check and maintain regularly, don't use it until the broken parts are fixed well.
10. Cut off all the input power when not use.
11. Follow the national or local related standard and regulations when using the AC/DC machine at narrow or high position.



**Danger! Please use preventive measures to avoid gas and fumes.**



**\* Gas and fumes are harmful to health.**

**\* It may cause choke when operate in narrow space.**

1. In case of accidents like gas poisoning or choke, please use suggested exhaust equipment and breathe preventive facilities.
2. In case of hurt and poisoning by gas and other powder, please use suggested part exhaust equipment and breathe preventive facilities.
3. When operated on trunks, boilers, cabins etc., the CO<sub>2</sub> and argon gas will stay in the bottom. Please replace gas sufficiently and use gas respire facilities in case of oxygen shortage.
4. Please accept the supervisor's check when operate in narrow space, and ensure enough gas supply

and use breathe preventive facilities.

5. Do not weld in degrease, washing and spray space.

6. Use breathe preventive facilities as it will cause poisonous dust and gas when weld shielded steel.



**Danger! Please follow the below notes to avoid accidents like fire and explode:**



**\* Spark and hot workpiece can cause fire.**

**\* It may cause fire if the cable is not connected well or when the current circuit of the steel or other workpiece are not connected completely.**

**\* Do not weld on the case of tinder stuff, or it may cause explode.**

**\* Do not weld airtight containers such as slot, pipe etc., or may break.**

1. Do not put tinder stuff in welding area.

2. Do not weld around tinder gas.

3. Do not put heat workpiece near the tinder stuff.

4. When weld the dooryard, ground and wall, do move away the tinder stuff around.

5. The cable joint place should be insulated.

6. The cable joint of the workpiece should be close enough to the welding place.

7. Do not weld those facilities with gas pipe or airtight slot.

8. Put fire extinguisher around the welding area in case of fire.



**Notes! Please wear protective appliance to avoid arc, spark, residue and noise.**



**Arc ray can cause eye inflammation or skin burnt.**

**\* Spark and residue will burn your eyes and skin.**

1. When welding or supervise welding, please use preventive facilities with enough shielding.

2. Please wear preventive glasses.

3. Please wear preventive facilities such as leather gloves, coat, foot-safeguard and apron.

4. Set preventive shield screen around the welding area to protect other people from harmful arc rays.



**Notes! Please follow the below notes to avoid gas cylinder toppling over or broken.**



**\* Toppling over of the gas cylinder will cause body hurt.**

**\* Wrong use of the gas cylinder will lead to high-pressure gas eruption and cause human hurt.**

1. Use the gas cylinder correctly.
2. Use the equipped or recommended gas adjustment.
3. Read the manual of the gas adjustment carefully before using it, and pay attention to the safety notes.
4. Fix the gas cylinder with appropriate holder and other relative parts.
5. Do not put the cylinder under high temperature and sunshine.
6. Do not put your face close to the gas cylinder exit when opening it.
7. Put on the gas shield when not use.
8. Do not put the torch on the gas cylinder or touch the electrode.



**Notes! Any touch of the switch part will cause injury, please pay attention to the below**



**notes:**

**\* Do not put fingers, hair, clothes etc. near to the moving parts such as the fan.**

1. Do not use the machine when the housing is off.
2. Ask professional person to install, operate, check and maintain the machine.
3. Do not put fingers, hair, clothes etc. near to the switch parts such as the fan.



**Notes! Follow the below note as the wire end may cause body hurt:**



**\* The wire shoot out from the torch can stab eyes, face and other naked parts.**

1. Before feeding the wire, do not look into the electric conduction hole, or the wire shoot out may stab your eyes and face.
2. When feeding the wire manually or press the torch, do not put the torch end near to your eyes, face and other naked parts.

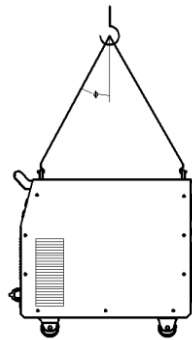


**Notes! Follow the below notes to ensure better work efficiency and power source:**



**\* No person under of in front of the machine when swing in case of injury!**

1. Precautions against toppling over.
2. Warning against the use of welding power source for pipe thawing.
3. Lift the power source from two sides when use the up-down forklift truck in case of toppling over.
4. When using the crane for lift, tie the rope to the ears with an angle no more than  $\phi 15$  to the vertical direction.
5. If the machine is equipped with gas cylinder and wire feeder, download them from the power source and ensure the horizontal of the machine. Do fix the gas cylinder with gallus or chain when moving it in case of body hurt.
6. Ensure fastness and insulation when using the swing ring to lift the wire feeder in welding.
7. If the machine is equipped with gallus or handles, they are only for hands not for crane, fork-lift truck or other swing equipments.



Lifting way for the machines with swing ring on the top ( $\phi \leq 15^\circ$ )



#### **Notes for electromagnetism disturb:**

1. It may need extra preventive measures when the power is used in some partial space.
2. Before the installation, please estimate the potential electromagnetism problems of the environment as follows:
  - 1) Upper and down parts of the welding equipments and other nearby power cable, control cable, signal cable and phone cable.
  - 2) Wireless electric as well as TV radiation and reception equipment.
  - 3) Computer and other control equipments.
  - 4) Safety-recognition equipment etc. Eg: supervise of industrial equipments.
  - 5) Health conditions of the people around. Eg: use of the heart pacemaker and audiphone.
  - 6) Equipments for adjustment and measurement.
  - 7) Anti-disturb capability of other used equipments .Users should ensure these equipments and the

environment are compatible, and this may need extra preventive measures.

8) Practical state of the welding and other activities.

3. Users should follow the below notes to decrease radiation disturb:

1) Connect the welding equipments to the power supply lines.

2) Maintain the welding equipments regularly.

3) The cable should be short enough to be close to each other and near to the ground.

4) Ensure the safety of all the metal parts and other parts nearby.

5) The workpiece should be well connected to the ground.

6) Shield or protect the other cable and equipments to decrease the influence of disturb. The welding equipments can be fully shielded under special conditions.

4. Users are responsible for the disturb problems caused by welding.



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## MACHINE DESCRIPTION

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The welding machines are rectifiers adopting the most advanced inverter technology.

The development of inverter gas-shielded welding equipment benefits from the development of the inverter power supply theory and components. Inverter gas-shielded welding power source utilizes high-power component IGBT to transfer 50/60Hz frequency up to 15KHz, then reduce the voltage and commutate, and output high-power voltage via PWM technology. Because of the great reduce of the main transformer's weight and volume; the efficiency increases by 30%. The appearance of inverter welding equipment is considered to be a revolution for welding industry.

The welding power source can offer stronger, more concentrated and more stable arc. When stick and work piece get short, its response will be quicker. It means that it is easier to design into welding machine with different dynamic characteristics, and it even can be adjusted for specialty to make arc softer or harder.

MMA welding machine has the following characteristics: effective, power saving, compact, stable arc, good welding pool, high no-load voltage, and good capacity of force compensation and multi-use. It can weld stainless steel, alloy steel, carbon steel, copper and other color metal. It can apply to electrode of different specifications and materials, including acidity, alkalescence, and fibre. It can apply in high altitude, the open air and inside and outside decoration. Compared with the same products of home and abroad, it is compact in volume, light in weight, easy to install and operate.

Thanks for purchasing the product and hope for your precious advice. We will dedicate to produce the best products and offer the best service.



**WARNING !**

**The machine is mainly used in industry. It will produce radio wave, so the worker should make fully preparation for protection.**

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## TECHNICAL PARAMETERS TABLE

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Model Parameters	I-DC500 II
Power voltage (V)	Three phase AC380V±15%
Frequency (Hz)	50/60
Rated input current (A)	38.4
No-load voltage (V)	93
Output current (A)	40-500
Rated output voltage (V)	40
Force range (A)	0-100
Hot-starting range (A)	0-135
Duty cycle (%)	60
No-load loss (W)	100
Efficiency (%)	85
Power factor	0.93
Insulation grade	H
Housing protection grade	IP21
Weight (kg)	47
Dimensions (mm)	650×310×640

# INSTALLATION INSTRUCTION

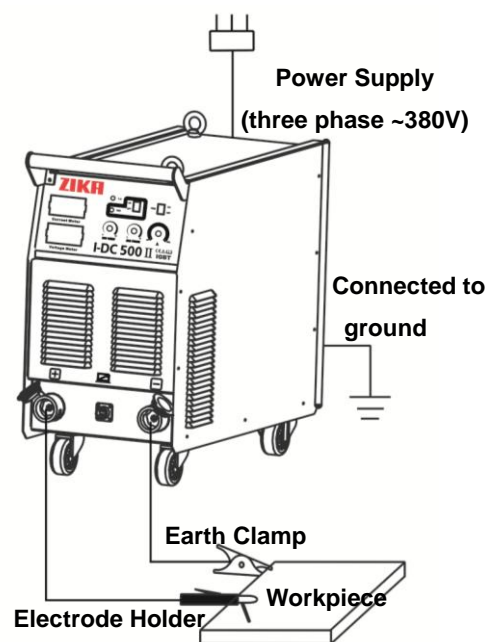
The machine is equipped with power voltage compensation equipment. When the power voltage fluctuation is between  $\pm 15\%$  of rated voltage, it still can work normally.

When use long cable, in order to prevent voltage form going down, bigger section cable is suggested. If the cable is too long, it may affect the performance of the power system. So cables of configured length are suggested.

1. Make sure the intake of the machine is not blocked or covered to avoid malfunction of cooling system.
2. Ground the cables with section area no less than  $6\text{mm}^2$  to the housing, the way is connecting screw in the back of the power source to ground device .
3. Correctly connect the arc torch or holder according to the sketch. Make sure the cable, holder and fastening plug have been connected with the ground. Put the fastening plug into the fastening socket at the “-“terminal and fasten it clockwise. Put the fastening plug of the cable to fastening socket of “+” terminal at the front panel, fasten it clockwise, and the earth clamp at the other terminal clamps the work piece.

## Installation Instruction of I-DC500 II :

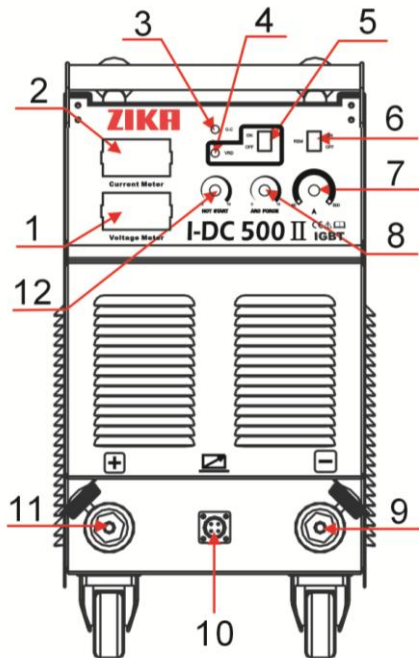
4. Please pay attention to the connecting terminal, DC welding machine has two connecting ways: positive connection and negative connection. Positive connection: holder connects with “-“terminal, while work piece with the “+”polarity. Negative connection: work piece with the “-“terminal, holder with the “+” terminal. Choose suitable way according to working demands. If unsuitable choice, it will cause unstable arc, more spatters and conglutination. If such problems occur, please change the polarity of the fastening plug.
5. According to input voltage grade, connect power cable with power supply box of relevant voltage grade. Make sure there is no mistake and the voltage of power supply does not exceed permission range. After the above job, installation is finished and welding is available.



**If distance of work piece and machine is too far (50-100m), and the cables (torch cable and earth cable) are too long, please choose cable of bigger section to minimize the reduction of the voltage.**

# PANEL FUNCTION INSTRUCTION

## I-DC500 II Front Panel Instruction:



1	Voltage meter
2	Current meter
3	Abnormal indicator light
4	VRD indicator light
5	VRD switch
6	Remote control switch
7	Welding current adjustment
8	ARC force current adjustment
9	Negative output terminal
10	Remote control
11	Positive output terminal
12	Hot-starting adjustment knob

The panel picture above is for reference only. If any difference with the real machine, please follow with the real machine.

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## OPERATION INSTRUCTION

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1. Turn on the power switch, screen will show set current value and ventilator is beginning to run.
2. Set suitable welding current and arc-striking push according to the thickness of work piece, diameter of welding rod , work position and technics needs.
3. Generally, welding current is adequate to welding electrode according with as following:

Specification	$\phi$ 2. 5	$\phi$ 3. 2	$\phi$ 4. 0	$\phi$ 5. 0	$\phi$ 6. 0
Current	70-100A	110-160A	170-220A	230-280A	260-300
Hot-starting	1-3	3-7	7-10	7-10	——

4. "Hot-starting adjustment knob"

You can adjust this knob below pre-set current 200A, which can make arc-striking more easy.

5. Knob of arc-striking drive is use to adjust welding function, specially in low current range, that is cooperated with knob of welding current adjustment, they may adjust current of arc striking and be out of control of knob of welding current adjustment .So machine can gain powerful energy and push current can achieve effect.

6. If welding machine has been coordinated remote control device:

- 1) Make sure the switch position of remote control device before operation .If switch is on "OFF" position that is out of remote control. Switch is on "ON" position that is using remote control device.
- 2) Insert plug of remote control in socket of remote control correctly and tighten firmly in order to prevent poor contact. If remote control device is not be used, make sure the switch is on "OFF" position, or welding current will not be adjusted on panel.
- 3) In removing the welding machine, some users bumped the remote control switch into wrong place accidentally so that the adjustment doesn't function properly. However, they mistake it for fault in machine. Please pay attention.

7. If the VRD equipment is installed in the machine. When the switch of front panel is put "ON" position, the VRD indicator is lit, and when the switch is put "OFF" position, the VRD indicator is off, then the no-load voltage is 67V. Switch of VRD is put inside the machine, with the "on" condition. The no-load voltage changes to be less than 15V, which is safe for people.



### **WARNING!**

**Before connecting operation please make sure all the power is turned off. The right order is to connect the welding cable and ground cable to the machine first, and make sure they are firmly connected and then put the power plug to the power source.**



### 1. Environment

- 1) The machine can perform in environment where conditions are dry with a dampness level of max 90%.
- 2) Ambient temperature is between -10 to 40 degrees centigrade.
- 3) Avoid welding in sunshine or drippings. Do not let water enter the gas.
- 4) Avoid welding in dust area or the environment with corrosive gas.
- 5) Avoid gas welding in the environment with strong airflow.

### 2. Safety norms

Our welding machine has installed protection circuit of over voltage, over current and over heat. When voltage, output current and temperature of machine are exceeding the rated standard, welding machine will stop working automatically. Because this will be damage to welding machine, user must pay attention to following.

#### 1) **The working area is adequately ventilated !**

Our welding machine is powerful machine, when it is being operated, it generated high currents, and natural wind cannot satisfy with machine cool demands. So there is a fan inside the machine for its cooling demands. Make sure the intake is not in block or covered, There should be 0.3 meter distance from welding machine to objects of environment. User should make sure the working area is adequately ventilated. It is important for the performance and the longevity of the machine.

#### 2) **Do not over load !**

The operator should remember to watch the max duty current (Response to the selected duty cycle) Welding current should not exceed max duty cycle current. Over-load current will damage and burn up the machine.

#### 3) **No over voltage !**

Power voltage can be found in diagram of main technical data. Automatic compensation circuit of voltage will assure that welding current keeps is in allowable range. If power voltage is exceeding allowable range limits, it can damage the components of machine. The operator should understand this situation and take preventive measures.

#### 4) **There is a grounding screw behind welding machine, with a grounding marker on it. Before operation, welding crust must be grounded reliably with cable which section is over 6 square millimeter, in order to prevent from static electricity, and accidents because of electricity leaking.**

#### 5) **If welding time is exceeding duty cycle limited, welding machine will stop working for protection. Because machine is overheated, temperature control switch is on "ON" position and the indicator light is red. In this situation, you don't have to pull the plug, let the fan cool the machine. When the indicator light is off, and the temperature goes down to the standard range, it can weld again.**

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## QUESTIONS TO BE RUN INTO DURING WELDING

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Fittings, welding materials, environment factor, supply powers maybe have some impact in welding. User must try to improve welding environment.

### **A. Arc-striking is difficult and easy to pause:**

1. Make sure quality of tungsten electrode is high.
2. If the electrode is not dried, it will cause unstable arc, welding defect increases and the quality is down.
3. If use extra-long cable, the output voltage will decrease, so please shorten the cable.

### **B. Output current is not to rated value:**

When power voltage departs from the rated value, it will make the output current not matched with rated value; when voltage is lower than rated value, the max output may lower than rated value.

### **C. Current is not stabilizing when machine is being operated:**

This may be caused by the following factors:

1. Electric wire net voltage has been changed.
2. There is harmful interference from electric wire net or other equipment.

### **D. Too much spatter during MMA welding:**

1. Maybe current is too heavy while welding rod diameter is too small:
2. Output terminal polarity connection is wrong. The positive connection should be applied at the normal technique, that is to say, welding rod connects with the negative polarity while the work piece with the positive polarity. So please change the polarity.

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## MAINTENANCE

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1. Remove dust by dry and clean compressed air regularly, if welding machine is operating in environment where is polluted with smokes and pollution air, the machine needs to be cleaned once a month.
2. Pressure of compressed air must be within the reasonable range in order to prevent damaging to small components of inner-machine.
3. Check internal circuit of welding machine regularly and make sure the circuit connections are connected correctly and tightly (especially plug-in connector and components). If scale and rust are found, please clean it, and connect again tightly.
4. Prevent water and steam from entering into the machine. If that happens, please blow it dry and check insulation of machine.
5. If welding machine will not be used for long time, it must be put into the packing box and stored in dry and clean environment.



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## TROUBLESHOOTING AND FAULT FINDING

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Notes: The following operations must be performed by qualified electricians with valid certifications. Before maintenance, please contact with us for professional suggestion.

### I-DC500 II fault symptom and solution:

Fault symptom	Solution
Meter doesn't display, fan doesn't work, no welding output.	<ol style="list-style-type: none"><li>1. Make sure power switch is off.</li><li>2. Make sure the power source connecting to input cable is working alright.</li><li>3. Make sure the input voltage is 3 phase.</li></ol>
Meter is normal, fan is working, no welding output.	<ol style="list-style-type: none"><li>1. Check if all kinds of components of machine are poor contact.</li><li>2. Check if connector of output terminal is broken or damaged.</li><li>3. Check if the control board is damaged (contact with the supplier or manufacturer).</li></ol>
Abnormal indicator is on, fan is working, meter is normal	<ol style="list-style-type: none"><li>1. IGBT is damaged.</li><li>2. Rectifier of quick recovery is damaged.</li><li>3. Control board is broken.</li><li>4. The feedback circuit is in fault. Please contact with the supplier or manufacturer.</li></ol>
Too much spatter during MMA welding	Output terminal polarity connection is wrong. So please change the polarity.
Erratic welding output current or out of control of potentiometer.	<ol style="list-style-type: none"><li>1. The potentiometer is damaged.</li><li>2. All kinds of connectors are poor contact, especially plugs. Check them.</li></ol>
Power switch doesn't work	<ol style="list-style-type: none"><li>1. Power switch is broken.</li><li>2. Three phase rectifier bridge is broken, replace it.</li><li>3. Check if there is any short circuit of inner-machine.</li></ol>



